

# Least Cost/Least Risk

Renewable Energy Initiative Workgroup

August 15, 2007

Artie Powell

Utah Division of Public Utilities

# Least Cost/Least Risk

- ◆ IRP Standards and Guidelines
  - Report and Order on Standards and Guidelines, Docket No. 90-2035-01, June 18, 1992
- ◆ PacifiCorp's IRP
  - 2007 Integrated Resource Plan
  - Chapter 6 and Appendix A
- ◆ State Statutes
  - Title 54-17, Energy Resource Procurement Act

# IRP Standards and Guidelines

- ◆ Integrated resource planning is a utility planning process which **evaluates all known resources** on a **consistent and comparable basis**, in order to meet current and future customer electric energy needs at the lowest total cost to the utility and its customers, and in a manner consistent with the long-run public interest. **The process should result in the selection of the optimal set of resources given the expected combination of costs, risk, and uncertainty.**

# IRP Standards and Guidelines Cont.

- ◆ Least Cost (Defined)
  - Total Resource Costs
    - Total Utility and Ratepayer Costs
    - Tie Breaker – Lowest Total Revenue Requirement
  - External Costs do not have to be explicitly included in the cost of the resource.

# IRP Standards and Guidelines Cont.

- ◆ Least Cost (Definition) Continued
  - Environmental costs must be analyzed by the Company and incorporated into the Company's decision making process.
    - The Public Interest requires such consideration.
    - Such Consideration helps reduce risk.

# IRP Standards and Guidelines Cont.

- ◆ Least Cost (Definition) Continued
  - IRP should include a range of of estimated external costs.
    - Show potential affect on resource selection.
    - Estimate magnitude of external costs
      - ◆ Total Emissions
      - ◆ Estimated External Costs

# PacifiCorp's IRP

- ◆ Preferred Portfolio Selection
  - Relative cost effectiveness
  - Customer rate impact
  - Balance between cost and risk exposure

# PacifiCorp's IRP Cont.

## ◆ Portfolio Performance Measures

### ■ Cost

- Present Value Revenue Requirement
- Customer Rate Impact
- Environmental (Emissions) Externality Costs
- Capital Costs

### ■ Risk

- Risk Exposure
- Production Cost Variability



# PacifiCorp's IRP Cont.

## ◆ Portfolio Performance Measures Cont.

### ■ Emissions

- Carbon Dioxide Emissions

### ■ Reliability

- Average Annual Energy not Served
- Loss of Load Probability

# PacifiCorp's IRP Cont.

- ◆ Environmental Externality Cost
  - Cost Adders for Air Emission Impacts
    - CO<sub>2</sub> SO<sub>2</sub>, NO<sub>x</sub>, Mercury (H<sub>g</sub>)
    - Treated as Variable Cost
    - See App A for Details

# PacifiCorp's IRP Cont.

- ◆ Environmental Externality Cost Cont.
  - Future Carbon Regulation
    - Capped at 2000 Levels
    - Trading Market begins in 2010
    - Five Adder Levels (2008 \$/Ton)
      - ◆ \$0, \$8, \$15, \$38, and \$61

# PacifiCorp's IRP Cont.

- ◆ Example of CO2 Adder
  - With high gas and electric prices, the CCCT replaces the supercritical pulverized coal plant with a CO2 adder of \$97/ton.

# State Statute

- ◆ 54-17-201 (2)
  - The Commission shall determine if the solicitation process: (ii) in the public interest taking into consideration:
    - Will likely lead to the lowest reasonable cost;
    - Long-term and short-term impacts;
    - Reliability
    - Financial impacts;
    - Other factors.